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RECREATIONAL BILLFISH SURVEY NEWSLETTER

Oceanic Gamefish Investigations



Western North Atlantic

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PREFACE

The National Marine Fisheries Service's (NMFS) Miami Laboratory has been conducting surveys of recreational billfishing in the Gulf of Mexico since 1971 and in the Atlantic Ocean and Caribbean Sea since 1972¹. These surveys were initiated to monitor trends in billfish catch and effort as part of a commitment by the United States to participate in cooperative international investigations through the International Commission for Conservation of Atlantic Tunas (ICCAT), centered in Madrid, Spain. The ICCAT is responsible for coordinating and guiding scientific investigations on stocks of tunas and tuna-like fishes, including billfishes, in the Atlantic Ocean and adjacent seas. Data collected through the NMFS surveys are used in population modeling and in annual assessments of the status of stocks of Atlantic billfishes, and these results are presented to the international scientific community at ICCAT each year.

In addition to the annual monitoring of recreational billfishing throughout the Western North Atlantic, Caribbean Sea, and Gulf of Mexico, NMFS has initiated special surveys designed to determine the total catch of billfishes by U.S. recreational fishermen. One such survey was conducted in 1977 and 1978 and follow-up surveys were conducted in the Gulf of Mexico in 1981 and in the Atlantic, Caribbean Sea, and Gulf of Mexico in 1983.

The recreational billfish surveys described in this newsletter are part of a larger research program conducted by the Miami Laboratory's Oceanic Pelagics Team. Other major program components within the Oceanic Pelagics

¹The primary species of billfishes covered in this newsletter include blue marlin, Makaira nigricans, white marlin, Tetrapturus albidus, and sailfish, Istiophorus platypterus. Auxillary information is also given for Atlantic spearfish, Tetrapturus spp., bluefin tuna, Thunnus thynnus, and yellowfin tuna, Thunnus albacares.

Team include cooperative gamefish tagging and research on age and growth of marlins and bluefin tuna. All three programs are closely associated with one another and are being conducted simultaneously in order to provide a comprehensive view for stock assessment. For example, many of the billfish tagged for the cooperative gamefish tagging program are tagged during the same tournaments which are monitored by the billfish surveys. Conversely, tagged billfish which are recaptured after being at-large for extended periods (i.e., fish where age can be closely approximated from tagging records) are sampled for skeletal structures to aid validation of the accuracy of our ageing studies. In addition, many of the fish sampled for age and growth studies are obtained at tournaments or from docks which are monitored by the billfish surveys. Appendix 1 gives a composite list of tournaments and dock sampling sites, arranged in chronological order, from all Atlantic, Gulf and Caribbean areas that were included in the 1982 billfish survey. Eighty-four tournaments and 16 docks were monitored during 1982 and 62,164 hours of effort were recorded. Accordingly, programs within the Oceanic Pelagics Team are not only closely associated with each other but their success is highly dependent on the cooperation from fishermen.

This newsletter is presented in two sections. The first section by Allyn "Monty" Lopez covers the Western North Atlantic (the U.S. East Coast, Bahamas, Caribbean Sea, and Straits of Florida), while the second section by Paul J. Pristas covers the Gulf of Mexico. We would like to extend our sincere appreciation to all cooperating parties for their help and we hope the information provided in this newsletter will be informative.

ERIC D. PRINCE
Oceanic Pelagics Team Leader

WESTERN NORTH ATLANTIC

Allyn Monty Lopez

Data from the Western North Atlantic (consisting of the U.S. East Coast, Bahamas, Caribbean Sea, and Straits of Florida) were collected by several different agencies. National Marine Fisheries Service personnel collected data from the Bahamas, the Caribbean, and the Florida Straits. The U.S. East Coast was covered by fishery reporting specialists working for NMFS, state biologists from South Carolina, and by Environmental Consultants Inc., Norfolk, Virginia.

The information obtained from surveys of these areas included angler success; hours of fishing effort; largest, smallest, and average weights of fish by species; type of baits used and effectiveness of each bait; and the number of fish hooked per unit of effort (HPUE) by species. Angler success was calculated by determining the percentage of fish caught after being hooked, and hooked per unit of effort was calculated by dividing the number of fish hooked by the number of hours spent trolling. Calculations for artificial baits, natural baits, and both baits fished at the same time are discussed in each section and expressed in HPUE.

The Bahamas

There was an overall decrease in the HPUE in 1982 for each species (Table 1). Hooked per unit effort in 1981 was 0.042 and in 1982 it was 0.037. Sailfish experienced the least amount of change with an HPUE in 1981 of 0.005 and 0.004 in 1982. Blue marlin HPUE decreased from 0.025 in 1981 to 0.024 in 1982 and white marlin had the greatest decrease with an HPUE of 0.013 in 1981 compared to 0.009 in 1982.

While the hours of fishing effort (9,710 hours) recorded in 1982 (Table 1) for the Bahamas was down approximately 10 percent from the previous year

(1,068 in 1981), several other aspects of the survey reflected increases. For example, the overall average weights of blue marlin were 15 pounds higher in 1982 (Table 2) than in 1981. Male blue marlin averaged 156 pounds; about 10 pounds heavier than in 1981. Female blue marlin averaged 327 pounds or about 5 pounds heavier than in 1981. Conversely, white marlin and sailfish averaged less in weight in 1982 than the previous year. White marlin (both sexes combined) averaged 61.6 pounds in 1981 and 56.1 pounds in 1982. Male and female white marlin averaged 49.9 pounds and 61.6 pounds in 1982 and 52.1 pounds and 65.4 pounds in 1981, respectively. Sailfish (both sexes combined) averaged 42.0 pounds in 1981 and 36.8 pounds in 1982. Male and female sailfish weighed an average of 33.6 and 42.9 pounds in 1982 and 39.5 and 48.0 pounds in 1981, respectively (Table 2).

Angler success in the Bahamas increased from 50 percent in 1981 to 52 percent in 1982 (Table 3). Data from 1981 to 1982 indicates an increase in the use of artificial bait (Table 4). This trend may partially explain the 1982 increase in overall angler success (Table 5). For example, of the total records collected with bait information for the Bahamas in 1981 (1,284), 89 percent showed the use of dead bait only, 5 percent indicated use of artificial baits, and 5 percent of the records indicated artificials and dead baits were trolled at the same time. In 1982, 68 percent of the interview records with bait information (1,418) indicated anglers using dead bait, 26 percent using artificial bait, and 6 percent using both types of baits at the same time. In 1981, HPUE for blue marlin in the Bahamas, calculated from records where bait information was available, was 0.029 using dead bait and 0.025 using artificials. In 1982, HPUE for blue marlin using dead bait was 0.023 and for artificial baits was 0.034. These numbers reflect a decrease in HPUE of 21 percent using natural baits and a 36 percent increase of HPUE

for artificial baits. Increase in the 1982 HPUE was only evident for blue marlin; white marlin and sailfish HPUE did not show an increase in 1982 over the previous year. The HPUE for dead bait and artificial baits used simultaneously also increased for blue marlin in 1982. Hooked per unit effort in 1981 was 0.008 and for 1982 it was 0.015. While trolling both kinds of baits simultaneously in 1981, 75 percent of the blue marlin were hooked on dead baits and 25 percent were hooked on artificial baits. In 1982, while using both baits simultaneously, 66.6 percent of the blue marlin were hooked on dead bait and 33.3 percent were hooked on artificial baits. The increase of blue marlin being hooked on artificials, rather than natural baits, may be attributed to increased trolling speeds and other refinements in fishing technique. The HPUE for all species combined for different baits are given in Table 4.

The Caribbean

In 1982, there were 2,251 hours of fishing effort monitored in the Caribbean compared to 2,182 hours in 1981. Similar to the Bahamas, 1982 was generally not a very good year for billfishing in the Caribbean. Although there was an increase in effort in 1982, the number of blue marlin hooked per unit of effort (HPUE) decreased by 40 percent; 1981 HPUE was 0.12 while in 1982 HPUE was 0.07 (Table 1).

The blue marlin that were weighed in 1982 from the Caribbean showed a decrease in average size of 43 pounds. The average weight of blue marlin in 1981 was 256 pounds, while in 1982 the average weight was 207 pounds. Males averaged about the same (136 pounds) but females averaged 357 pounds in 1981 and 280 pounds in 1982 (Table 2). The number of fish weights recorded from the Caribbean were less than those examined from other areas, probably because of the practice of releasing fish, particularly in St. Thomas.

In 1982, HPUE for natural baits, artificial baits, and using both simultaneously are 0.223, 0.199, and 0.264, respectively (Table 4). The HPUE for both baits fished simultaneously (0.264) is the highest we recorded from any of the areas surveyed. While Puerto Rican fishermen are quite conventional in the types of baits they use and the speeds they troll, billfishermen in other parts of the Caribbean (particularly St. Thomas) generally use substantially different techniques. Most fishermen in other areas using natural baits prefer a fresh bait which is flexible and appears as natural looking as possible. These fishermen go to such extremes as removing the backbone and even "split-tailing" their baits. These procedures allow the bait to "swim" through the water while being trolled. Because fishermen in St. Thomas troll at faster speeds and the waters are usually rough, natural baits are "pickled" in formalin. This process toughens the bait and allows the bait to be trolled faster and longer without falling apart. Thus, the high HPUE for both baits used at the same time we recorded in the Caribbean in 1982 are probably due to a combination of increased efficiency in trolling techniques, as well as a high concentration of blue marlin in this area.

The East Coast of the United States

The hours of fishing effort (Table 1) documented for 1982 (15,243) were only 383 hours less than the number documented in 1981 (15,626). Insufficient numbers of fish were sexed to determine average weights of fish by sex. Overall, there was an increase in the average weight of blue marlin from 251.4 pounds in 1981 to 337.4 pounds in 1982 (Table 2). The average weight of white marlin increased by only 0.2 pounds in 1982. In 1981, overall average weight for white marlin was 53.8 pounds, while in 1982 overall average weight was 54.0 pounds.

In 1982, anglers were not as successful in catching the fish they hooked as they were in 1981. Data collected in 1982 show 44.1 percent of the blue marlin which were hooked were actually caught (Table 3). In 1981, 54 percent of the fish hooked were caught. There was also a decrease in angler success for white marlin; angler success in 1981 was 67.3 percent and 59.5 percent in 1982. Not enough data were collected on sailfish for angler success to be calculated.

The number of fish hooked per unit of effort (HPUE) along the East Coast increased in 1982 (Table 1). In 1981, 2,517 billfish were hooked with 15,626 hours of effort; a HPUE of 0.161. In 1982, 3,462 billfish were hooked with 15,243 hours of effort and the HPUE was 0.227. The HPUE for white marlin was only 0.132 in 1981, whereas the 1982 HPUE was considerably higher (0.209) and was the major factor contributing to the 1982 increase in HPUE along the East Coast. The HPUE for blue marlin was relatively stable, averaging 0.017 in 1981 and 0.017 in 1982.

Data collected on the use of natural baits, artificial baits, and both types of baits trolled simultaneously indicate an increase in the use of artificial baits (Table 4). In 1981, the number of records collected which indicated types of bait used show 78 percent, 4 percent, and 18 percent for natural bait, artificial bait and using both baits simultaneously, respectively. In 1982, records indicated that 35 percent used natural baits, 27 percent used artificial baits, and 38 percent used both baits trolled simultaneously. These data show a decrease in HPUE from 0.213 in 1981 to 0.124 in 1982 for natural baits. Artificial bait HPUE decreased from 0.178 in 1981 to 0.177 in 1982. The HPUE using both baits simultaneously increased from 0.112 in 1981 to 0.125 in 1982.

Florida Straits

The only data available from the Florida Straits for 1982 came from the Islamorada Sailfish Tournament and the Key West Blue Marlin Tournament. Surprisingly, the data for the Islamorada Sailfish Tournament in 1981 and 1982 are very similar in all areas except for angler success. For example, the number of hours trolled were 1,197 and 1,177 for 1981 and 1982, respectively. Hooked per unit effort for this tournament was 0.140 in 1981 and 0.137 in 1982. In addition, HPUE for the Islamorada tournament has always been extremely high compared with other tournaments we sample. This high HPUE can be attributed to the use of live baits and also the concentration of sailfish in the area. The total number of sailfish hooked for 1981 was 168 and 161 for 1982. Angler success showed the greatest change. In 1981, anglers landed 69 percent of their sailfish, while in 1982 they were only 52 percent successful. Another interesting fact about this tournament is that during both years, most of the sailfish were hooked between 9:00 a.m. and 10:00 a.m. This corresponds with data presented in our 10 year summary report for the most frequent time of day sailfish are hooked.

The First Annual Key West Blue Marlin Tournament was held in 1982, and there were 2,085 hours of fishing effort during the tournament (Table 1) and 53 billfish hooked. Hooked per unit effort for this tournament was 0.025 (Table 1), which is comparable to tournaments held in the Bahamas and Gulf of Mexico, and the overall angler success was very good (62%). The largest fish weighed 461.5 pounds, and the average weight for blue marlin (both sexes) was 286.5 pounds.

ACKNOWLEDGMENTS

The success of this program is dependent upon the information collected from sportsfishermen. Therefore, a great deal of gratitude is extended to all of the anglers, crews, and tournament managers for their cooperation and patience in providing us with their fishing data. We particularly thank the South Carolina Wildlife and Marine Resources Department for their continued support. We also thank the Bimini Big Game Fishing Club, the Cat Cay Club, the Chub Cay Club, the Walker's Cay Club, the Club Nautico de San Juan, and the directors of the Chuck Senff Marlin Tournament in St. Thomas.

Table 1. Billfishes hooked per unit effort (HPUE) by species and geographical area in 1982.

Species	U.S. East Coast	Bahamas	Caribbean	Florida Straits ¹
Blue Marlin	0.017	0.024	0.075	0.022
White Marlin	0.209	0.009	-	0.002
Sailfish	-	0.004	-	0.001
Overall	0.227	0.037	0.075	0.025
Hours of fishing effort	15,243	9,710	2,251	2,085

¹All data from Key West Marlin Tournament.

Table 2. Average weights (pounds) by species and geographical area, 1982.

Species	U.S. East Coast	Bahamas	Caribbean	Florida Straits ¹	All Areas Combined ²
Blue Marlin					
Male	-	156.0	138.0	196.0	154.9
Female	-	327.0	280.0	347.0	294.6
Overall	337.4	229.0	207.0	287.0	257.6
White Marlin					
Male	-	50.0	-	-	47.0
Female	-	62.0	-	-	53.6
Overall	54.0	56.0	56.0	54.3	52.2
Sailfish					
Male	-	34.0	-	-	39.7
Female	-	43.0	-	-	47.7
Overall	-	37.0	-	50.5	42.7

¹Weight information from Key West Marlin Tournament only.

²Average weights of all fish weighed in 1982 by species.

Table 3. Number of billfish (by species) hooked, caught, lost, and percent boated by geographical area, 1982.

Species	U.S. East Coast	Bahamas	Caribbean	Florida Straits ¹
Blue Marlin				
Hooked	274	235	170	45
Caught	122	116	127	27
Lost	152	119	43	18
% boated	45	49	75	60
White Marlin				
Hooked	3,188	87	-	4
Caught	1,898	47	-	3
Lost	1,290	40	-	1
% boated	60	54	-	75
Sailfish				
Hooked	-	41	-	161
Caught	-	27	-	84
Lost	-	14	-	74
% boated	-	65	-	52
Overall ¹				
Hooked	3,462	363	-	210
Caught	2,020	190	-	114
Lost	1,442	173	-	93
% boated	58	52	75	54

¹Data for Florida Straits are from the Islamorada Sailfish Tournament and the Key West Marlin Tournament.

Table 4. Billfish hooked per unit effort (HPUE) by bait type (natural, artificial, and both simultaneously) and geographical area, 1982.

Bait type	U.S. East Coast	Bahamas	Caribbean	Florida Straits ¹
Natural Bait	0.124	0.041	0.223	0.020
Artificial Bait	0.177	0.039	0.199	0.031
Both Simultaneously	0.125	0.023	0.264	0.034

¹All data from Key West Marlin Tournament.

GULF OF MEXICO

Paul J. Pristas

During the 12 year period from 1971-1982, port sampling has been conducted from six major locations along the Gulf coast. With the exception of 1981, port samplers have been located at the following ports: Port Aransas, Texas; Grand Isle and South Pass, Louisiana; Mobile, Alabama/Pensacola, Florida; and Destin and Panama City, Florida. In 1981, supplemental funding from the Gulf of Mexico Fishery Management Council allowed additional port samplers to be stationed throughout the season at Port Isabel and Galveston, Texas; Biloxi, Mississippi; and St. Petersburg, Florida.

While collecting data on billfishing, it was not always possible to determine fishing effort related to catches. This usually resulted from: (1) catches recorded in log books left at marinas; (2) boats transporting billfishes landed on other boats; and (3) supplemental tournament records. These data are not included in catch/effort analyses in this report.

Catch and Effort

The recorded number of hours trolling for billfishes, and the numbers of fishes raised, hooked, boated, and released are shown in Table 1. The 30,691 hours of trolling effort recorded in the northern Gulf was the third highest amount of effort recorded during the 12 years of study; only 2 percent (652 hours) below the peak year of 1978. The total amount of effort recorded in the peak year of 1981 (34,890 hours) was the greatest amount ever recorded, but included 5,149 hours from the four additional ports of Port Isabel, Galveston, Biloxi, and St. Petersburg.

During the season, anglers reported catching 1,840 billfishes while trolling for big game fishes (Tables 1 and 2). Eighty-two percent (1,515

fishes) of the catches were reported with fishing effort (Table 1), and 18 percent (325 fishes) were reported without accompanying effort (Table 2). Seventy-three percent (1,352 fishes) of the reported total catches were boated and 27 percent (488 fishes) were released. Blue marlin, white marlin, and sailfish composed 24, 62, and 14 percent, respectively, of the reported catches.

Our index of apparent relative abundance is based on the number of fish hooked-per-hour-of-trolling (HPUE). Many factors can affect the catchability of billfishes and our use of relative abundance, based on number of fish hooked-per-hour-of-trolling, does not necessarily reflect the total numbers of billfishes in the Gulf of Mexico but instead is an index of change in abundance from year to year. For marlins and sailfish, Figure 1 shows the HPUE over the 12 year period of study. For blue marlin, the HPUE (0.028) was 12 percent below last year's HPUE (0.032). However, the HPUE for blue marlin in 1982 increased 12 percent over the 11 year average HPUE (0.025). From 12 years of recreational fishing data, there does not appear to be an increase or decrease in the availability of blue marlin to anglers in the northern Gulf based on the relative abundance index. The HPUE (0.048) for white marlin in 1982 was 12 percent above the 11 year average HPUE (0.043). This increase was 26 percent above the 1981 HPUE (0.038). Although fluctuations in the relative abundance index for white marlin have varied considerably over the 12 year period, no definitive trend is discernible. The hooked rate for sailfish in 1982 resulted in an HPUE (0.010) that was 5 percent below the average HPUE (0.022) during the previous 11 years. The low HPUE for sailfish in 1982 was 33 percent below the 1981 HPUE (0.015). There appears to be a considerable decrease in the relative abundance index of sailfish during the last six years of this study. For all three combined species, the HPUE (0.087) last season was 4 percent above 1981 (0.084). The 3 percent decrease in the 1982 HPUE from 11 year average HPUE (0.090)

indicated a slightly decreasing trend in the relative abundance index of billfishes in the northern Gulf. This trend was strongly influenced by the HPUE data for sailfish.

Driftfishing, primarily for swordfish, became an increasingly popular nighttime activity in big game fishing in the northern Gulf about 1978. While collecting data on billfishing, we recorded data on driftfishing which are shown in Table 3. The 358 hours of recorded data in 1982 was the lowest number of hours recorded during the 5 year period since 1977 and was 54 percent below the previous 4 year average. Although marlins and sailfish are occasionally caught driftfishing, swordfish generally comprise the majority of the catch. From 1978 through 1982, the composition of the driftfishing catch has been 81 percent swordfish, 2 percent blue marlin, 2 percent white marlin, and 14 percent sailfish.

Size Composition

Size data recorded in conjunction with fishing effort in 1982 (Table 4) and average weights for marlins and sailfish for 1971-1982 (Fig. 2) are presented for comparisons. The largest and smallest marlins and sailfish were all reported from Texas (Table 4). The 722.0 pound blue marlin is the third largest (1,018.5 pounds, 1977; 738.0 pounds, 1980) recorded during the 12 year study. The average weight (254.4 pounds) for blue marlin in 1982 was only 0.9 pounds below the previous 11 year average. The consistency in the average weights of this species, with no apparent decrease in their relative abundance index (Fig. 1) over the past several years, suggests a healthy fishery for blue marlin in the northern Gulf. The 50.8 pound average weight of white marlin in 1982 was 2.6 pounds below the 11 year average and extended the declining trend reported the previous year. The average weight (43.7 pounds) of sailfish in 1982 increased 0.9 pounds from 1981 and was only 0.1 pounds heavier than the 11 year average. There was no definitive trend in the weight of sailfish caught over the 12 year period.

Bait Preference

The results of trolling with natural baits (dead), artificial baits (lures), or both simultaneously are shown in Table 5. In the northern Gulf, the three combined species had the highest HPUE (0.101) rate when only dead baits were trolled. However, the highest catch-per-unit-effort (CPUE) occurred when only artificial baits were used (0.050). With the exception of blue marlin in the northwestern Gulf, the highest HPUE and CPUE for both species of marlins occurred when only artificial baits were trolled. The high HPUE (0.041) and CPUE (0.016) values for sailfish in the northwestern Gulf while using only dead bait influenced results when all areas were combined. However, in the northeastern and northwestern Gulf, the HPUE and CPUE for sailfish generally was highest when only lures were trolled.

Fishing Areas

One of the questions most frequently asked by recreational anglers who have participated in this study is "Where was the best fishing?". Charts 1-3 show the fishing area by 10 minute latitude-longitude squares for which 10 hours or more of trolling effort were recorded. The numbers of billfishes that raise to take a bait divided by the number of hours fished within a square resulted in indices of low, mid, and high rates (see charts for definitions).

In the northeastern Gulf (Chart 1), anglers reported raising billfishes in 92 percent of the 59 squares with 10 or more hours of effort. Fishing was not reported south of 29° N latitude, as it had been in the previous four consecutive years. High incidences of raised fish occurred in 8 percent of the areas fished, with mid and low values reported in 22 and 61 percent, respectively. In contrast to 1981, when the majority of raised fish occurred in the southeastern section, the majority of the high incidences of raised fish in 1982 occurred in the southwestern section of the fishing area.

In the northcentral Gulf (Chart 2), the area fished increased 58 percent in size (25 squares) over the previous season. However, billfishes were raised in 82 percent of the areas fished compared to 93 percent of the 1981 fishing area. The greatest numbers of raised fish in 1982 were southwest of the main fishing area and were not contiguous with it; this was similar to 1981 findings. This resulted from comparatively little effort being expended and only small numbers of billfishes raised in these areas. In 1982, high, mid, and low values occurred in 3, 24, and 56 percent, respectively, of the area fished; whereas in 1981, the high, mid, and low rates were 2, 9, and 81 percent of the area fished, respectively.

In the northwestern Gulf (Chart 3), the size of the fishing area decreased 24 percent (25 squares) in 1982, compared to 1981. Although the fishing area decreased by almost one-fourth, the percent of area in which billfishes were reportedly raised did not greatly vary (90 percent, 1981; 94 percent, 1982). High rates of raised fish were in 15 percent of the area fished and, in contrast to 1981 when some were inshore, all occurred at the 50 fathom curve or beyond. Mid and low values were reported in 32 percent and 46 percent of the area fished, respectively. During the 1982 season, only 6 percent of the area fished had no raised billfishes, as compared to 10 percent during the previous season.

Related Observations

1. The season's first billfish brought into port was a 310 pound blue marlin caught aboard the NOONIE G on February 13, 1982.
2. The spearfish recorded in Table 2 weighed 56.2 pounds and was brought into port aboard the SATISFACTION during the 12th Annual Pensacola International Billfish Tournament.
3. The only Grand Slam (i.e., catches of blue marlin, white marlin, and sailfish on one trip) reported by NMFS personnel was brought into Port Isabel on July 24th aboard the QUIEN SABE.

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I appreciate the hard work involved in the collection of over 6,199 billfish records by the following port samplers: Julie Findley, Port Aransas; Myron Fischer, Grand Isle; Joe Yurt, South Pass; Ismael Torres, Mobile/Pensacola; Don Rozycke, Destin; and Debbie Fable, Panama City.

Table 1. Hours trolled and billfishes raised, hooked, boated or released () in the northern Gulf of Mexico, 1982.

Areas and Port	Total hours trolled	Blue marlin			White marlin			Sailfish			Swordfish			Spearfish			All species combined		
		R	H	B(R)	R	H	B(R)	R	H	B(R)	R	H	B(R)	R	H	B(R)	R	H	B(R)
		Number																	
Northeastern Gulf	8,428	224	182	79(8)	755	572	164(206)	29	27	16(5)	1	1	1(0)	1	1	1(0)	1,010	783	261(219)
Panama City	1,229	25	17	6(0)	68	45	17(2)	1	1	0(0)	0	0	0(0)	0	0	0(0)	94	63	23(2)
Destin	862	32	23	16(1)	83	61	21(18)	5	5	3(1)	0	0	0(0)	0	0	0(0)	120	89	40(20)
Pensacola	3,053	65	60	23(2)	282	240	57(90)	19	17	10(4)	0	0	0(0)	1	1	1(0)	367	318	91(96)
Mobile	3,284	102	82	34(5)	322	226	69(96)	4	4	3(0)	1	1	1(0)	0	0	0(0)	429	313	107(101)
Northcentral Gulf	10,269	411	280	105(47)	437	277	118(96)	17	17	12(3)	0	0	0(0)	0	0	0(0)	865	574	235(146)
South Pass	7,177	305	201	75(38)	341	204	81(80)	1	12	8(3)	0	0	0(0)	0	0	0(0)	658	417	164(121)
Grand Isle	3,092	106	79	30(9)	96	73	37(16)	5	5	4(0)	0	0	0(0)	0	0	0(0)	207	157	71(25)
Northwestern Gulf																			
Texas	11,994	490	407	116(12)	771	636	310(62)	362	260	128(26)	3	3	0(0)	0	0	0(0)	1,626	1,306	554(100)
All three areas	30,691	1,125	869	300(67)	1,963	1,485	592(364)	408	304	156(34)	4	4	1(0)	1	1	1(0)	3,501	2,663	1,050(465)

R = Raised

H = Hooked

B(R) = Boated (Released)

Table 2. Numbers of billfishes reported as boated or released () with no accompanying data on fishing hours in the northern Gulf of Mexico, 1982.

Area and Port	Number					All species combined
	Blue marlin	White marlin	Sailfish	Swordfish	Spearfish	
Northeastern Gulf						
Panama City	0	0	3	0	0	3
Destin	31	138(14)	17	1	0	187(14)
Pensacola	2	17	1	0	1	21
Mobile	6(2)	7(4)	1	0	0	14(6)
Northcentral Gulf						
South Pass	0	0	0	1	0	1
Grand Isle	3	4	0	0	0	7
Northwestern Gulf						
Texas	22(2)	10	37(1)	0	0	69(3)
All three areas	64(4)	176(18)	59(1)	2	1	302(23)

Table 3. Summary of recorded driftfishing for big game fishes in the northern Gulf of Mexico, 1982.

	Panama City	Destin	Pensacola	Mobile	South Pass	Grand Isle	Texas	All areas combined
Total hours fished	32	27	7	139	6	0	147	358
Number of recorded catches*								
Swordfish	0	0	0	0	0	0	1	1
Blue marlin	0	0	0	1	0	0	0	1
White marlin	0	0	0	0	0	0	0	0
Sailfish	0	0	0	0	0	0	0	0
Spearfish	0	0	0	0	0	0	0	0
All billfishes	0	0	0	1	0	0	1	2

*Includes releases.

Table 4. Weights (pounds) of billfishes recorded in conjunction with fishing effort in the northern Gulf of Mexico, 1982.

Species	Panama City	Destin	Pensacola	Mobile	South Pass	Grand Isle	Texas	All areas combined
Blue marlin								
Largest	359.2	512.5	561.5	535.0	521.4	427.0	722.0	722.0
Smallest	174.2	117.0	125.8	75.0	104.9	111.8	40.0	40.0
Average	274.4	254.7	261.5	237.8	275.4	278.0	237.5	254.4
White marlin								
Largest	65.5	74.0	67.0	89.8	86.7	78.8	104.0	104.0
Smallest	40.5	42.0	32.0	35.5	36.5	33.0	25.0	25.0
Average	53.5	53.8	51.9	53.0	54.3	54.9	48.4	50.8
Sailfish								
Largest	0	39.0	52.5	44.0	69.8	51.0	74.0	74.0
Smallest	0	39.0	35.0	40.5	34.0	30.0	2.8	2.8
Average	0	39.0	44.7	42.8	50.5	40.3	43.3	43.7
Spearfish								
Largest	0	0	60.8	0	0	0	0	60.8
Smallest	0	0	60.8	0	0	0	0	60.8
Average	0	0	60.8	0	0	0	0	60.8
Swordfish								
Largest	0	0	0	54.0	0	0	46.0	54.0
Smallest	0	0	0	54.0	0	0	46.0	46.0
Average	0	0	0	54.0	0	0	46.0	50.0

Table 5. Hours trolled and numbers of billfishes hooked-per-hour-of-trolling (HPUE) and caught-per-hour-of-trolling (CPUE) with various baits fished in the northern Gulf of Mexico, 1982.

Area and Species	Dead bait only			Artificial bait only			Both simultaneously			
	Hours trolled	HPUE	CPUE	Hours trolled	HPUE	CPUE	Hours trolled	Dead HPUE	Dead CPUE	Artificial HPUE CPUE
Northeastern Gulf	573			6,406			1,638			
Blue marlin		0.005	0.003		0.024	0.013		0.007	0.004	0.008 0.002
White marlin		0.056	0.037		0.067	0.044		0.033	0.014	0.029 0.013
Sailfish		0.003	0.002		0.003	0.003		0.001	0	0.001 0.001
All three species		0.065	0.042		0.094	0.060		0.040	0.018	0.038 0.016
Northcentral Gulf	13			10,592			80			
Blue marlin		0	0		0.027	0.014		0	0	0.012 0.012
White marlin		0	0		0.026	0.021		0	0	0 0
Sailfish		0	0		0.002	0.001		0	0	0 0
All three species		0	0		0.055	0.036		0	0	0.012 0.012
Northwestern Gulf	940			9,223			1,942			
Blue marlin		0.038	0.012		0.033	0.010		0.011	0.004	0.021 0.007
White marlin		0.045	0.022		0.058	0.035		0.012	0.004	0.018 0.009
Sailfish		0.041	0.016		0.018	0.012		0.015	0.008	0.012 0.007
All three species		0.124	0.050		0.109	0.057		0.038	0.016	0.051 0.023
All three areas	1,526			26,221			3,660			
Blue marlin		0.026	0.009		0.028	0.013		0.009	0.004	0.015 0.005
White marlin		0.048	0.028		0.047	0.013		0.021	0.008	0.022 0.011
Sailfish		0.027	0.010		0.008	0.007		0.008	0.004	0.007 0.004
All three species		0.101	0.047		0.084	0.050		0.038	0.016	0.044 0.020

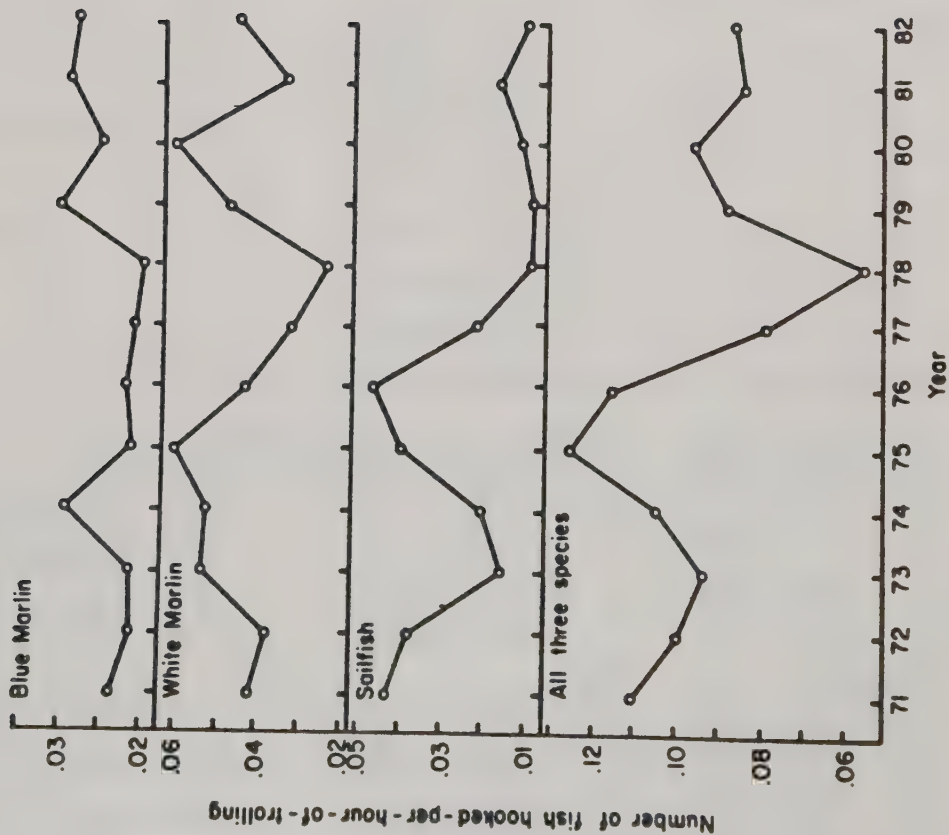


Figure 1 - Number of billfishes hooked-per-hour-of-trolling in the northern Gulf of Mexico, 1971-82

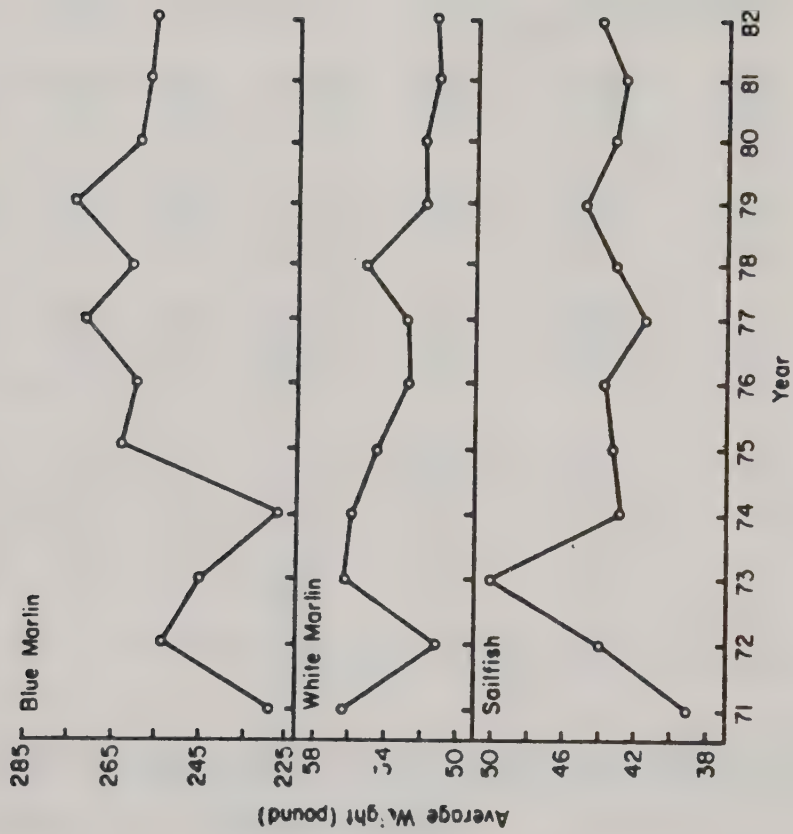


Figure 2 - Average weight (pounds) of billfishes in the northern Gulf of Mexico, 1971-82

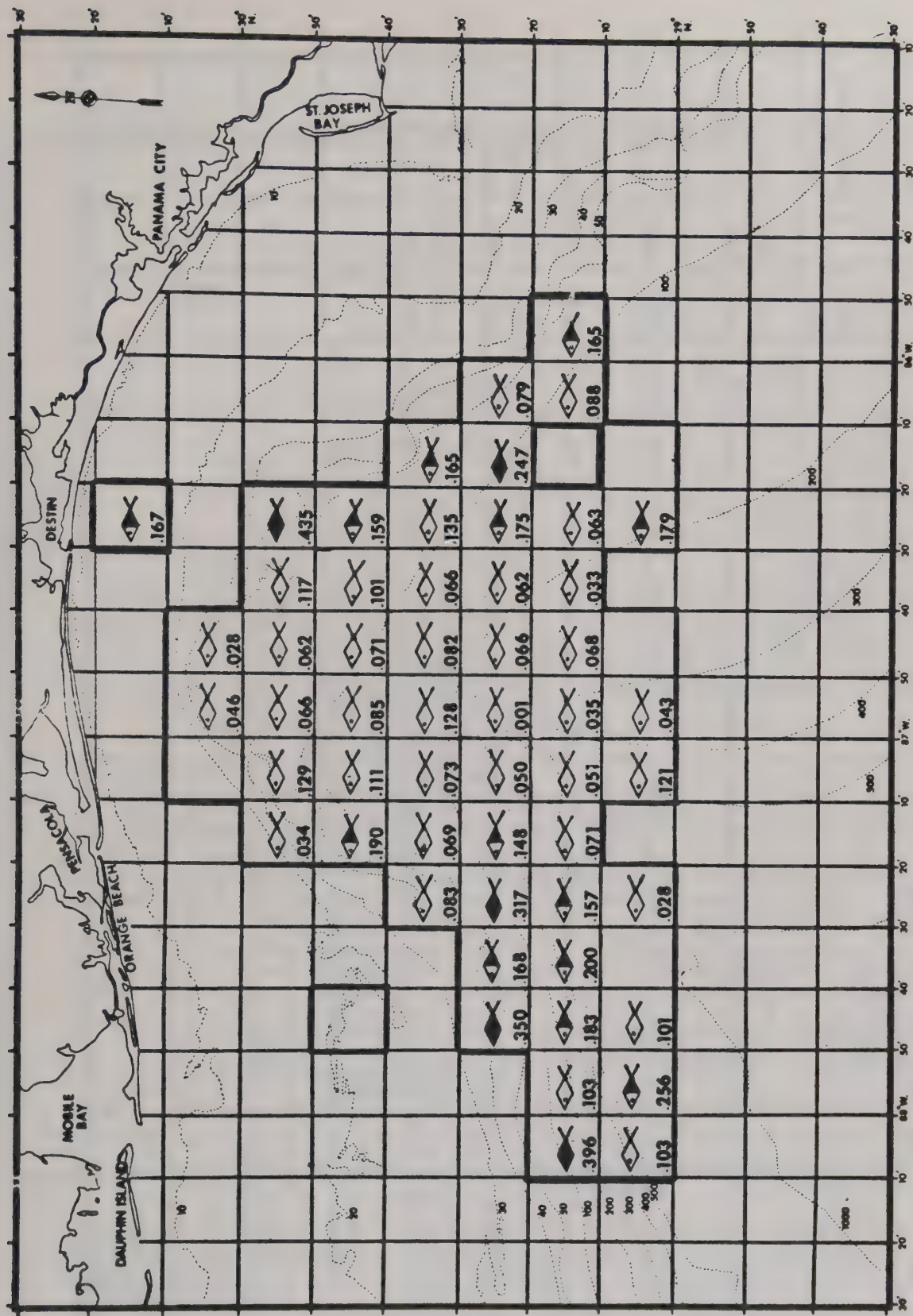


CHART 1.--Numbers of billfishes raised-per-hour-of-trolling in the northeastern Gulf of Mexico by 10-min squares, 1982.

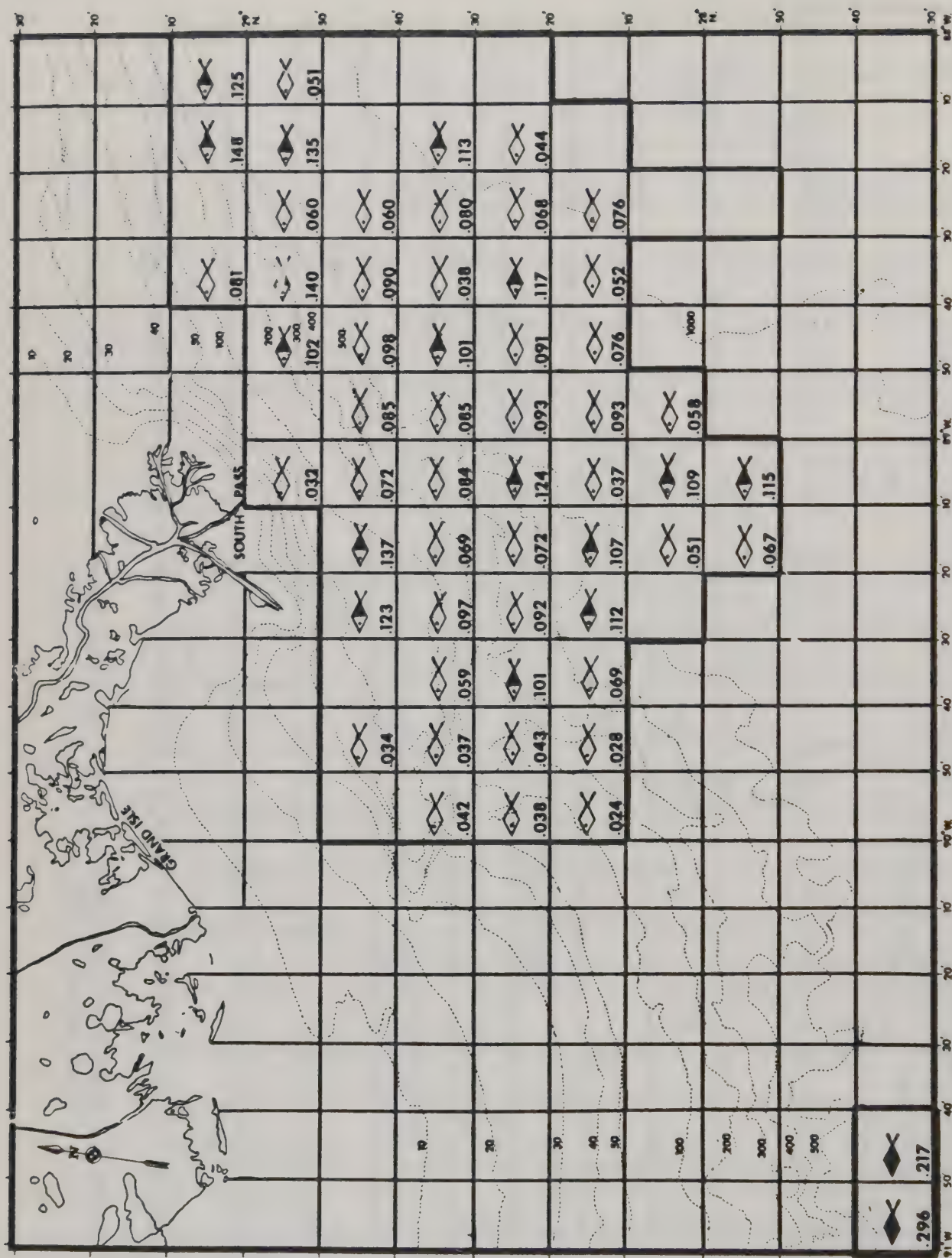
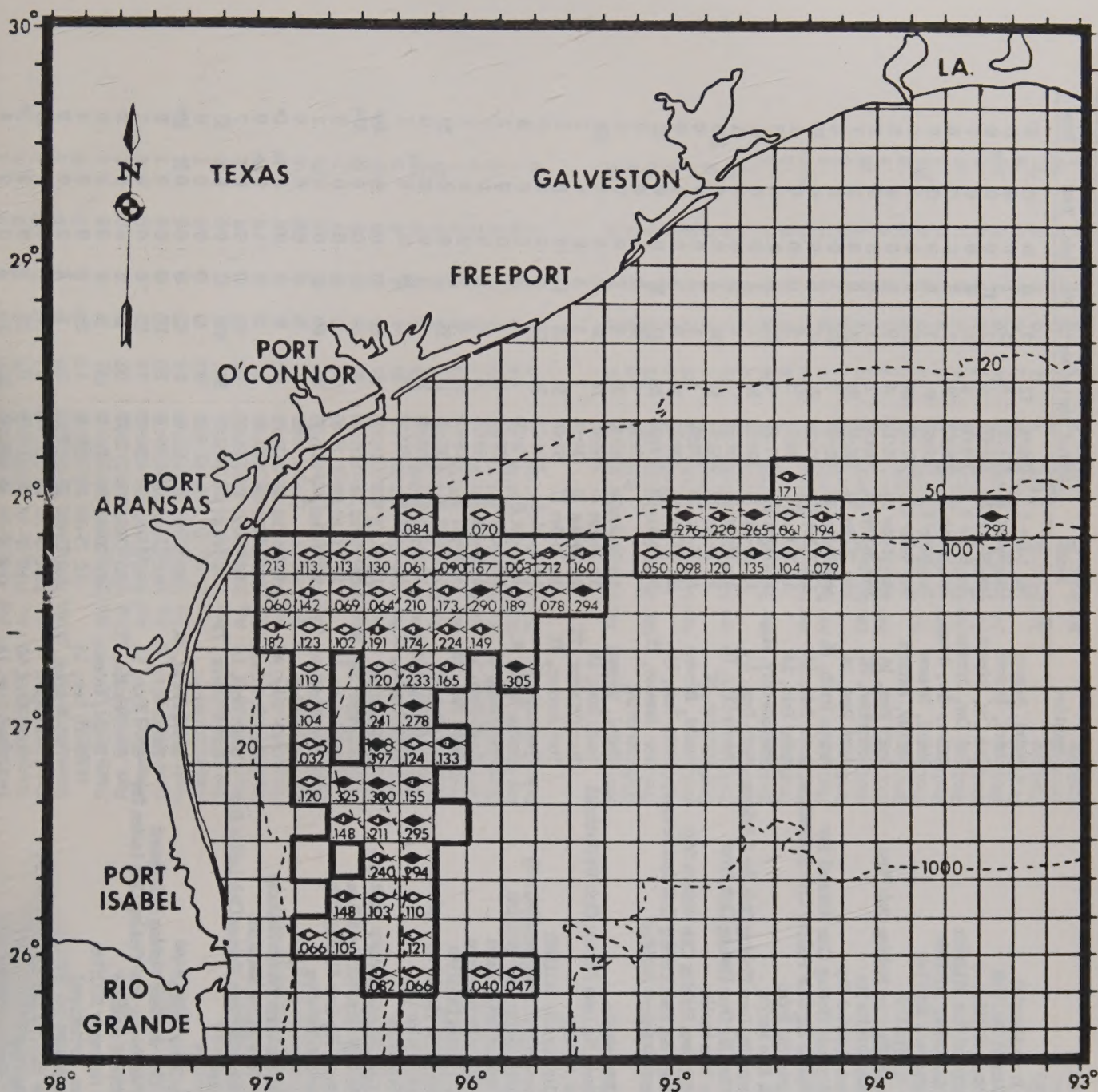


CHART 2.--Numbers of billfishes raised-per-hour-of-trolling in the northcentral Gulf of Mexico by 10-min squares, 1982.



- | | | |
|----------------------------|--|---|
| L
E
G
E
N
D | Fishing area bound by heavy black lines. | .001-.130 fish raised-per-hour-of-trolling. |
| | No fish raised in squares without symbols. | .131-.260 fish raised-per-hour-of-trolling. |
| | | ≥ .261 fish raised-per-hour-of-trolling. |
| | | |

CHART 3.—Numbers of billfishes raised-per-hour-of-trolling in the northwestern Gulf of Mexico by 10-min squares, 1982.

Appendix I Tournaments and docks sampled by oceanic gamefish personnel or by personnel from cooperating agencies for the year 1982.

Tournament	Location	Dates	Hours Fished	Number Hooked				
				Blue Marlin	White Marlin	Sail Fish	Yellowfin Tuna	Tuna
Frankie Brown Memorial Annual Recreational Billfish	Bimini, Bahamas	Mar 1-Mar 5	936:00	12	7	0	0	0
Members Only Billfish	Bimini, Bahamas	Mar 16-Mar 20	831:30	5	13	1	0	0
Annual Hls and Hars Billfish	Club Cay, Bahamas	Mar 31-Apr 2	158:00	4	12	17	0	0
Bartman-Hatteras Billfish	Club Cay, Bahamas	Apr 5-Apr 9	308:00	8	14	4	0	0
Cat Cay All Billfish	Walkers Cay, Bahamas	Apr 26-Apr 30	2888:00	79	11	3	0	0
New Orleans Big Game Fishing Club First	Bimini, Bahamas	May 6-May 8	999:00	41	7	0	0	0
Georgetown Blue Marlin	Cay Cay, Bahamas	May 8-May 12	757:25	24	13	4	0	0
Mobile Big Game Fishing Club Memorial Day	South Pass, LA	May 14-May 16	86:15	4	0	0	0	0
Golden Meadow Big Game Fishing Club Invitational	Georgetown, SC	May 18-May 20	304:57	2	1	0	0	0
South Lafourche Rodeo	South Pass, LA	May 28-May 30	485:50	29	13	0	0	1
Big Rock Blue Marlin	Orange Beach, AL	May 29-May 30	433:00	7	10	3	0	0
New Orleans Big Game Fishing Club Tag & Release	Grand Isle, LA	Jun 3-Jun 5	1017:25	27	14	0	0	28
Parana City Big Game Fishing Club First	Grand Isle, LA	Jun 5-Jun 6	50:00	3	3	0	0	1
Hatteras Blue Marlin	Marchand City, NC	Jun 7-Jun 12	771:25	8	10	0	0	38
Bimini Big Game Fishing Club Members Only	South Pass, LA	Jun 11-Jun 13	330:35	19	4	1	0	45
Baton Rouge Big Game Fishing Club Invitational	Parana City, FL	Jun 12-Jun 12	109:35	2	5	0	0	1
Port Aransas Masters Billfish	Hatteras, NC	Jun 14-Jun 18	1633:50	56	34	4	0	105
Bimini Blue Marlin	Bimini, Bahamas	Jun 15-Jun 19	178:30	3	1	1	0	0
La Pesca Fishing	South Pass, LA	Jun 17-Jun 19	336:32	17	9	3	0	9
Texas Championship Billfish	Port Aransas, TX	Jun 19-Jun 20	850:00	38	12	17	0	22
Pescapola International Billfish	Drifting	Jun 22-Jun 26	1382:30	25	8	7	0	0
Golden Meadow Tarpon Rodeo	Bimini, Bahamas	Jun 24-Jun 26	1856:45	34	35	3	0	108
Golden Meadow Tarpon Rodeo	South Pass, LA	Jun 25-Jun 26	174:55	7	3	3	0	2
General Ray Huff Billfish	Port O'Connor, TX	Jun 26-Jun 27	751:00	36	24	11	0	5
Capt Fanny Blue Marlin	Port Aransas, TX	Jul 2-Jul 3	1286:25	24	50	5	0	6
Deep Sea Roundup	Pescapola, FL	Jul 2-Jul 3	36:30	1	1	0	0	0
South Jersey White Marlin	Orange Beach, AL	Jul 2-Jul 4	237:15	4	6	0	0	2
Atlantic City White Marlin & Tuna	Grand Isle, LA	Jul 2-Jul 4	108:25	4	4	0	0	7
Baton Rouge Big Game Fishing Club	South Pass, LA	Jul 2-Jul 5	379:00	15	8	0	0	3
Port Mansfield Fishing	Beaufort, NC	Jul 5-Jul 9	1205:05	14	55	0	0	30
Mid-Atlantic White Marlin Handicap	Club Cay, Bahamas	Jul 5-Jul 9	845:00	24	1	1	0	0
Darphin Island Deep Sea Rodeo	Port Aransas, TX	Jul 6-Jul 8	599:10	3	22	10	0	2
New Orleans Big Game Fishing Club Ladies Day	Cape May, NJ	Jul 8-Jul 9	325:00	0	53	0	0	46*
Poco Bueno	Atlantic City, NJ	Jul 15-Jul 16	231:00	3	24	0	0	37*
Eastern Shore Marlin	South Pass, LA	Jul 15-Jul 15	25:40	0	1	0	0	0
Parana City Big Game Fishing Club Second	Port Mansfield, TX	Jul 15-Jul 17	426:23	18	44	17	0	1
Golden Meadow Big Game Fishing Club Ladies Day	Drifting	Jul 16-Jul 18	6:00	0	0	0	0	0
Port Aransas Outboard	Ocean City, MO	Jul 16-Jul 18	281:45	1	2	1	0	0*
Ernest Hemingway Billfish	Darphin Island, AL	Jul 16-Jul 17	336:20	9	19	0	0	7
Hatteras Invitational	South Pass, LA	Jul 16-Jul 17	752:04	38	108	13	0	32
Mako Onboard	Port O'Connor, TX	Jul 16-Jul 17	8:00	0	0	0	0	0
Babylon Invitational Marlin	Drifting	Jul 17-Jul 18	131:00	0	42	0	0	19*
Challenge Cup	Wachapreague, VA	Jul 17-Jul 17	99:15	2	11	0	0	0
Grand Isle Tarpon Rodeo	Parana City, FL	Jul 17-Jul 18	240:00	3	15	0	0	1
Beach Haven Marlin	Grand Isle, LA	Jul 17-Jul 18	26:00	0	0	1	0	0
Rubee Inlet Marlin Release	Port Aransas, TX	Jul 20-Jul 24	416:30	10	0	3	0	0
	Bimini, Bahamas	Jul 23-Jul 24	299:45	1	23	0	0	4
	South Pass, LA	Jul 23-Jul 25	128:01	2	1	4	0	0
	Port Aransas, TX	Jul 24-Jul 25	200:00	0	14	0	0	12*
	Babylon, NY	Jul 24-Jul 25	118:00	0	22	0	0	2*
	Ocean City, MO	Jul 24-Jul 31	662:45	12	11	4	0	4
	Grand Isle, LA	Jul 25-Jul 31	559:00	6	14	0	0	9
	South Pass, LA	Jul 30-Jul 31	239:00	0	88	1	0	2*
	Ocean City, NJ	Jul 30-Jul 31	238:00	3	27	1	0	0*
	Virginia Beach, VA	Jul 30-Jul 31	481:30	16	27	7	0	0

[illegible]

